Amendments to the Specification

Amend the first paragraph of the "Background of the Invention" on page 3, as follows:

MODTRAN4 is the U.S. Air Force (USAF) standard moderate (2 cm^{-1}) or broader/coarser spectral resolution radiative transport (RT) model for wavelengths extending from the thermal InfraRed (IR) through the visible and into the ultraviolet (0.2 to 10,000.0 μm). [See: A. Berk, G.P. Anderson, P.K. Acharya, L.S. Bernstein, J.H. Chetwynd, M.W. Matthew, E.P. Shettle and S.M. Adler-Golden, "MODTRAN4 User's Manual," Air Force Research Laboratory Report, June 1999, and see: A. Berk, L.S. Bernstein, G.P. Anderson, P.K. Acharya, D.C. Robertson, J.H. Chetwynd and S.M. Adler-Golden, "MODTRAN Cloud and Multiple Scattering Upgrades with Application to AVIRIS," *Remote Sens. Environ.* **65**, pp. 367-375, 1998~~, the disclosures of which are incorporated herein by reference~~.]

Amend the last paragraph on page 4 as follows:

Narrowing the band model spectral resolution changes the fundamental character of the band model. The half-width of molecular transitions near sea level average about 0.08 cm^{-1}. As illustrated in Figure 1(a), the 1.0 cm^{-1} band model calculates the absorption of atomic and molecular lines whose line center regions lie almost entirely within the spectral bin. At the finer spectral resolution, a much larger fraction of any atomic or molecular line falls outside of the spectral bin containing the line. Determination of the new band model has therefore required improved treatment of both line tail and line center absorption. Line tail absorption is modeled closer to line centers (as defined by a compilation of spectroscopic data), and the finite-bin

single-line equivalent width used to calculate line center absorption is no longer simply a small perturbation of the total single line equivalent width.